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REMARKS

This Amendment is in response to the final Office Action mailed on June 14, 2006. Claim 1 is currently amended. Claim 1 is amended editorially and is supported, for example, in the specification on page 12, lines 28-31 and Figure 1. Claims 16-18 are added. Claim 16 is added and is supported, for example, in the specification on page 4, lines 26-31; page 5, lines 33-37; page 9, lines 20-27; and page 12, lines 8-37. Claim 17 is added and is supported, for example, in the specification on page 13, lines 20-32. Claim 18 is added and includes the features from original claim 1 and is supported, for example, in the specification on page 4, lines 26-31; page 5, lines 33-37; page 9, lines 20-27; and page 12, lines 8-37. No new matter is added. Claims 1-8 and 12-18 remain pending, with claims 9-11 being withdrawn.

Examiner Interview:

Applicants thank the Examiner, Mr. Ashok Patel, for the telephonic interview that took place on August 29, 2006 with the Attorney on record, Mr. Douglas P. Mueller. The subject of the interview was to discuss the features described in claim 1. In particular, the feature of claim 1 of a surface-modifying layer, formed on the surface of each of the cathodes emitting the electrons, comprising a chemical bond between a cathode material composing the cathodes and a material different from the cathode material. No agreement on the features of claim 1 was reached. Also, please note that while the possibility of submitting a Rule 132 Affidavit was discussed, Applicant's representation did not state that a Rule 132 Affidavit would be filed.

102(b) Rejections:

Claims 1-8, 14 and 15 are rejected under 35 USC 102(b) as anticipated by Jones (US Patent No. 5,869,169). This rejection is traversed.

Claim 1 is directed to a field-emission electron source that requires, among other features, that a surface-modifying layer has a substantially uniform thickness formed on the surface of each of the cathodes emitting the electrons.

Jones does not disclose or teach or suggest these features. In particular, nowhere does Jones disclose or teach or suggest a surface-modifying layer that has a substantially

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Jones does not disclose or teach or suggest these features. In particular, nowhere does Jones disclose or teach or suggest a surface-modifying layer that has a substantially uniform thickness formed on a surface of each of the cathodes. In contrast, Jones is directed to a field emitter element that discloses a low work function material (16), alleged in the Office Action as a surface-modifying layer, significantly thicker in the vertical direction at the upper tip portion than at a lower portion (see column 2, lines 2-7 and Figure 1).

Moreover, Jones actually teaches away from claim 1. Jones describes that the low work function material (16) is applied to a bottom material through a deposition technique (see column 4, lines 2-3). As is known in the art, this deposition technique is not capable of achieving a surface-modifying layer having a substantially uniform thickness as required in claim 1. For at least these reasons, claim 1 is neither anticipated nor obvious and should be allowed. Claims 2-8, 14 and 15 depend from claim 1 and should be allowable for at least the same reasons.

103(a) Rejections:

Claims 12 and 13 are rejected under 35 USC 103(a) as being obvious on consideration of Jones in view of Alig (US Patent No. 4,178,531). This rejection is traversed.

Claims 12 is directed to an image display apparatus that requires, among other features, an electron gun arranged inside a vacuum container and provided with the field-emission electron source according to claim 1. As described above, Jones neither discloses nor teaches or suggests the field-emission electron source of claim 1. For at least the same reasons described above, claim 12 is not obvious and should be allowed. Claim 13 depends from claim 12 and should be allowed for at least the same reasons.

New Claim 18:

In order to expedite allowance of this application, Applicants distinguish newly drafted independent claim 18 over Jones. Claim 18 is directed to a field-emission electron source that requires, among other features, a material, which is different from a

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cathode material composing the cathodes, which is chemically bonded to the cathode material on a surface of each of the cathodes by exposing each of the cathodes to a plasma treatment. The chemically bonded material and the cathode material thereby constitute a surface-modifying layer having a substantially uniform thickness.

Jones does not teach or suggest these features. Specifically, nowhere does Jones teach or suggest a chemical bond between the cathode material and the material different from the cathode material formed by exposing the cathodes to a plasma treatment. In contrast, Jones discloses the low work function material (16) deposited with a high surface sticking coefficient during evaporation (see column 4, lines 2-4).

Furthermore, nowhere does Jones teach or suggest a surface-modifying layer that has a substantially uniform thickness. As described above, Jones teaches away from this feature by disclosing a low work function material (16) significantly thicker in the vertical direction at the upper tip portion than at a lower portion (see column 2, lines 2-7 and Figure 1). Accordingly, claim 18 is not obvious over Jones and should be allowed.

Conclusion:

In view of the above amendments and remarks, Applicants respectfully request a Notice of Allowance for claims 1-8 and 12-18. Accordingly, claims 9-11 should be reinstated for allowance with the elected claims. If a telephone conference would be helpful in resolving any issues concerning this communication, please contact Applicants' primary attorney-of record, Douglas P. Mueller (Reg. No. 30,300), at (612) 455-3804.

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